UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/718,143	11/21/2000	Lior Shabtay	500001-A1-US	1084

31825 7590 07/20/2007
RYAN, MASON & LEWIS, LLP
90 FOREST AVENUE
LOCUST VALLEY, NY 11560

EXAMINER	
STRANGE, AARON N	
ART UNIT	PAPER NUMBER
2153	

MAIL DATE	DELIVERY MODE
07/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

ED

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/718,143
Filing Date: November 21, 2000
Appellant(s): SHABTAY, LIOR

Michael L. Wise
Reg. No. 55,734
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 1/23/2007 appealing from the Office action mailed 2/22/2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The amendment after final rejection filed on 3/18/2004 has not been entered. As discussed in the Advisory Action of 4/7/2005, Appellant proposed amendments that introduced new limitations that required new consideration and/or search, in addition to correcting the typographical errors of claims 3,6 and 9. While the Examiner noted that Appellant had previously argued unclaimed limitations (Final Rejection of 12/16/2004, ¶6), this is not "consideration" of the limitation.

It should also be noted that Appellant has had multiple opportunities to make the proposed amendments since the Advisory Action of 4/7/2005, since two subsequent Office actions have been mailed, but Appellant has chosen not to make the amendments.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

Bernstein et al.	US Patent No. 6,157,644	Dec. 5, 2000 (Filed Oct. 7, 1997)
Cohen et al.	US Patent No. 6,389,462	May 14, 2002 (Filed Dec. 16, 1998)

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claim 6, the limitation "determining whether the packets math an entry of the list comprises comparing the source IP address and source port of the packets to respective fields in the list" is not clear, since these parameters are modified by the load balancer when it is operating in the second mode, as claimed in claim 1. No mode of operation is specified in claim 6 or any claim from which it depends.

Claims 1-22, 28-35 and 37-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernstein et al. (US 6,157,644) in view of Cohen et al. (US 6,389,462).

With regard to claim 1, Bernstein discloses a method of accelerating the operation of a router by an accelerator switch comprising:

receiving, by the accelerator, packets directed to the router (packets are received at network-side port) (Col 6, Lines 15-17);

determining, for at least one of the received packets, whether the packets match an entry of a list of packet groups (Col 6, Lines 21-25), by comparing fewer than five packet parameters (a single parameter) that are not changed by the load balancer to

respective fields of entries of the list (IP destination address is compared with entries in the packet forwarding table); and

forwarding, by the accelerator, at least one of the received packets, directly to its destination, responsive to the determining (packets which match an entry are forwarded directly to their final destination, bypassing the router)(Col 7, Lines 4-22). Bernstein fails to specifically disclose that the router is a load balancer configured to operate in a first mode that changes at least one of a destination IP address and a destination port and a second mode that changes at least a source IP address and a destination IP address of one or more packets it forwards.

Cohen teaches the use of load balancers to direct requests for content to proxy servers. Cohen further discloses that the load balancer is configured to operate in a first mode that changes at least one of a destination IP address and a destination port (half NAT) and a second mode that changes at least a source IP address and a destination IP (full NAT) address of one or more packets it forwards (at least Col 14, Lines 26-33 and Col 15, Lines 16-19). Load balancers would have been an advantageous addition to the system disclosed by Bernstein since the accelerator switch taught by Bernstein would have increased the throughput between the clients and the proxies at low cost (Explicitly noted by Bernstein: Col 4, Lines 49-51). Subsequent requests directed to the proxies would be handled by the switch and bypass the load balancer, reducing the processing time needed for the requests.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use load balancers as the router in the system taught by

Bernstein in order to increase the throughput of the load balancing network by bypassing the load balancer for requests from clients already assigned to a proxy.

With regard to claims 2 and 4, Bernstein further discloses that determining whether the packets match an entry of the list comprises comparing three or fewer parameters (a single parameter) of the packets to respective fields in the list (IP destination address) (Col 6, Lines 21-25).

With regard to claim 3, while the system disclosed by Bernstein in view of Cohen shows substantial features of the claimed invention (discussed above) it fails to specifically disclose that determining whether the packets match an entry of the list comprises comparing two parameters of the packets to respective fields in the list.

However, it is clear that the number of parameters is flexible based on the operating environment of the system and adding additional parameters to the comparison as needed would have been a matter of preference for the system designer to ensure that sessions could be uniquely identified. Depending on the operating environment of the system, different numbers of parameters may be needed to ensure that a session may be uniquely identified. Unique session identification is crucial in the system disclosed by Bernstein and Cohen since the switch forwards sessions to a location that has already been assigned to the session (Bernstein; Col 5, Lines 30-33). If the session cannot be uniquely identified, it may be forwarded to the wrong location.

Selecting a particular number of parameters would have been well within the skill set of one of ordinary skill in the art, and would have been an obvious variation of the system taught by Bernstein and Cohen, in order to ensure unique identification of sessions.

With regard to claim 5, Bernstein and Cohen further disclose that receiving packets directed to the load balancer comprises receiving packets directed from a client to a Web site (URL requests) (Cohen, Col 6, Lines 31-34) associated with the load balancer and forwarding at least one of the received packets directly to its destination comprises forwarding the packets from the clients to one of the servers of the Web site without passing through the load balancer (subsequent packets are passed through without being load balanced) (Bernstein, Col 7, Lines 4-22).

With regard to claims 6,7, and 9 while the system disclosed by Bernstein and Cohen shows substantial features of the claimed invention (discussed above), it fails to specifically disclose that the compared parameters are the source IP/port or specifically exclude the destination address and/or source address.

Nonetheless, it is apparent that the particular compared parameters may vary depending on the operating environment of the system. Depending on the operating environment of the system, different parameters may need to be compared to ensure that a session can be uniquely identified. Unique session identification is crucial in the

system disclosed by Bernstein and Cohen since the switch forwards sessions to a location that has already been assigned to the session (Bernstein; Col 5, Lines 30-33). If the session cannot be uniquely identified, it may be forwarded to the wrong location.

Selecting particular parameters would have been well within the skill set of one of ordinary skill in the art, and would have been an obvious variation of the system taught by Bernstein and Cohen, in order to ensure unique identification of sessions.

With regard to claim 8, Bernstein and Cohen further disclose that receiving packets directed to the load balancer comprises receiving packets directed from a server to a client (response to requests)(Cohen, Col 15, Lines 57-67) and forwarding at least one of the received packets directly to its destination comprises forwarding the packets from the server to the client without passing through the load balancer (subsequent packets are passed through without being load balanced) (Bernstein, Col 7, Lines 4-22).

With regard to claim 10, Bernstein further discloses that the compared parameters do not include a source address (Col 6, Lines 21-25).

With regard to claim 11, Bernstein further discloses that forwarding at least one of the received packets comprises forwarding packets for which a matching entry was found (Col 7, Lines 4-22).

With regard to claim 12, Cohen further discloses that the load balancer is operating in half NAT or full NAT mode (discussed regarding claim 1).

With regard to claim 13, Bernstein discloses a method of accelerating the operation of a router by an accelerator switch comprising:

receiving, by the accelerator, a packet directed to or from a router (Col 6, Lines 15-17);

creating, by the accelerator, and entry comprising parameters not changed by the load balancer in the list of destination server, responsive to the received packet (Col 6, Lines 28-47).

Bernstein fails to specifically disclose that the router is a load balancer configured to operate in a first mode that changes at least one of a destination IP address and a destination port and a second mode that changes at least a source IP address and a destination IP address of one or more packets it forwards.

Cohen teaches the use of load balancers to direct requests for content to proxy servers. Cohen further discloses that the load balancer is configured to operate in a first mode that changes at least one of a destination IP address and a destination port (half NAT) and a second mode that changes at least a source IP address and a destination IP (full NAT) address of one or more packets it forwards (at least Col 14, Lines 26-33 and Col 15, Lines 16-19). Load balancers would have been an advantageous addition to the system disclosed by Bernstein since the accelerator switch taught by Bernstein would have increased the throughput between the clients and the proxies at low cost

(Explicitly noted by Bernstein: Col 4, Lines 49-51). Subsequent requests directed to the proxies would be handled by the switch and bypass the load balancer, reducing the processing time needed for the requests.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use load balancers as the router in the system taught by Bernstein in order to increase the throughput of the load balancing network by bypassing the load balancer for requests from clients already assigned to a proxy.

With regard to claim 14, Bernstein further discloses that creating the entry comprises creating an entry which does not include a destination address of a web site (IP destination address is used) (Col 6, Lines 44-47).

With regard to claims 15 and 16, Cohen further discloses that the load balancer is operating in half NAT or full NAT mode (discussed regarding claim 1).

With regard to claims 17 and 18, Bernstein and Cohen further disclose that receiving the packet comprises receiving a packet directed from the load balancer to a server (Bernstein Col 6, Lines 39-42) or from a server to the load balancer (response to requests)(Cohen, Col 15, Lines 57-67).

With regard to claim 19, Bernstein further discloses that creating the entry comprises creating the entry using only information in the received packet as it was received (IP destination address) (Col 6, Lines 44-47).

Claims 20-22 are rejected under the same rationale as claims 6,7, and 9, since they recite similar subject matter.

With regard to claim 28, Bernstein discloses a load balancing accelerator, comprising:

an input interface which receives packets directed to a router (packets are received at network-side port) (Col 6, Lines 15-17);

a table which lists packet groups and their respective destination servers, the table having physical entries which can accommodate different field sets for storage of data entries (packet-forwarding table)(Col 6, Lines 21-25);

a comparator which compares at least one of the packets directed to the router to one or more of the data entries of the table (Col 6, Lines 21-25);

a forwarding unit which forwards at least one of the packets for which a match was found by the comparator, directly to a server, responsive to the contents of the matching data entry (Col 7, Lines 4-22); and

a controller which determines in which field set, from the plurality of different field sets, each of the data entries of the table is stored (Col 6, Lines 34-47).

Bernstein fails to specifically disclose that the router is a load balancer.

Cohen teaches the use of load balancers to direct requests for content to proxy servers. Cohen further discloses that the load balancer is configured to operate in a first mode that changes at least one of a destination IP address and a destination port (half NAT) and a second mode that changes at least a source IP address and a destination IP (full NAT) address of one or more packets it forwards (at least Col 14, Lines 26-33 and Col 15, Lines 16-19). Load balancers would have been an advantageous addition to the system disclosed by Bernstein since the accelerator switch taught by Bernstein would have increased the throughput between the clients and the proxies at low cost (Explicitly noted by Bernstein: Col 4, Lines 49-51). Subsequent requests directed to the proxies would be handled by the switch and bypass the load balancer, reducing the processing time needed for the requests.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use load balancers as the router in the system taught by Bernstein in order to increase the throughput of the load balancing network by bypassing the load balancer for requests from clients already assigned to a proxy.

Claims 29-31 and 33-35 are rejected under the same rationale as claims 6,7, and 9, since they recite similar subject matter.

With regard to claim 32, Bernstein further discloses that all data entries of the table are stored in the same field sets (Only IP address/next hop fields are used)(Col 6, Lines 21-25).

With regard to claim 37 and 39-41, Bernstein discloses a router accelerator, comprising:

an input interface which receives packets directed to a router (packets are received at network-side port) (Col 6, Lines 15-17);

a table which lists packet groups and their respective destination servers (packet-forwarding table)(Col 6, Lines 21-25);

a comparator which compares at least one of the packets directed to the router to at least one of the entries of the table (Col 6, Lines 21-25);

a forwarding unit which forwards directly to a server, at least one of the packets for which a match was found by the comparator, responsive to the contents of the matching entry (Col 7, Lines 4-22), and changes at least one of the fields of the forwarded packets (layer 2 next hop address is changed) (Col 7, Lines 14-20); and

Bernstein fails to specifically disclose that the forwarding unit is capable of operating in a plurality of operation modes, a controller which determines in which mode the forwarding unit operates, or that the router is a load balancer.

Cohen teaches the use of load balancers to direct requests for content to proxy servers. Cohen further discloses that the load balancer is configured to operate in a first mode that changes at least one of a destination IP address and a destination port (half NAT) and a second mode that changes at least a source IP address and a destination IP (full NAT) address of one or more packets it forwards (at least Col 14, Lines 26-33 and Col 15, Lines 16-19). Load balancers would have been an advantageous addition

to the system disclosed by Bernstein since the accelerator switch taught by Bernstein would have increased the throughput between the clients and the proxies at low cost (Explicitly noted by Bernstein: Col 4, Lines 49-51). Subsequent requests directed to the proxies would be handled by the switch and bypass the load balancer, reducing the processing time needed for the requests.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use load balancers as the router and have the forwarding unit emulate the different modes of the load balancer based on determination of the load balancer's operating mode in order to maintain transparency of the accelerator switch and increase the throughput of the load balancing network by bypassing the load balancer for requests from clients already assigned to a proxy.

With regard to claim 38, Bernstein further discloses that the forwarding unit is capable of performing splicing (accelerator is transparent) (Col 4, Line 64 to Col 5, Line 7).

(10) Response to Argument

As an initial matter, the Examiner would like to note that the Grounds of Rejection, set forth above, contain additional explanation over that provided in the Non-Final Rejection of 2/22/2006, responsive to which this appeal was filed. The grounds of rejection have not been changed, only the explanation of the rejection.

A summary of the various points raised by Appellant is presented below, and each point is address individually by the Examiner.

Regarding claim 6:

a) Appellant argues only that the after final amendment filed 3/18/2004 should have been entered, which would have resulted in entry of this amendment (Page 6 of the Brief).

In reply to argument (a), as discussed in section (4), the proposed amendment was not entitled to entry. Appellant has had numerous opportunities to amend the claims since that amendment was denied entry, and has chosen not to do so. Applicant has failed to argue the merits of the rejection.

Regarding claims 1-5, 8 and 10-19:

b) Appellant argues that the cited references fail to teach or suggest the claimed "determining" step comprising "comparing fewer than five parameters that are not changed by the load balancer to respective fields of entries of the list" (Page 7 of the Brief).

c) Appellant argues that there is no motivation to combine Cohen and Bernstein, and that the motivation to combine was taken from the present invention, using hindsight and Appellant's teaching as a blueprint (Pages 7-8 of the Brief).

d) Appellant argues that the combination of Bernstein and Cohen would "change the principle of operation of Bernstein" (Page 8 of the Brief).

In reply to argument (b) that Bernstein and Cohen fail to teach "comparing fewer than five parameters that are not changed by the load balancer", the Examiner respectfully disagrees. As discussed above in the Grounds of Rejection for claims 1, 2 and 4, Bernstein explicitly discloses that the router compares *a single* parameter that is not changed by the load balancer. Specifically, the parameter compared in Bernstein is the IP destination address. Col 6, Lines 21-25 recites the following:

> The PPL 604 then extracts the IP destination address from the packet frame (step 904) and forwards it to the port's packet forwarding table for comparison with the IP destination addresses stored in the CAM of the PFT (steps 906,908).

It is clear from this section that a single parameter is compared, which meets the limitation of "fewer than five" parameters. It should also be noted that there is no disclosure in Bernstein that the router changes this parameter.

In reply to argument (c) that there is no motivation to combine Bernstein and Cohen, the Examiner respectfully disagrees. Bernstein expressly states that the disclosed invention "provides a means whereby existing routing systems may be upgraded to increase throughput at low cost" (Col 4, Lines 49-51). Cohen is an "existing routing system" that could benefit from Bernstein's teachings. Therefore, Appellant's arguments are not persuasive.

In reply to argument (d) that the combination of Bernstein and Cohen would "change the principle of operation of Bernstein", the Examiner respectfully disagrees. Appellant asserts that the combination "would require a substantial redesign of way [sic] in which packets are addressed and routed in Bernstein's invention." However, this is simply not the case. Bernstein's router is not defined as having any particular design. In fact, Bernstein explicitly states that "[t]he router accelerator switch 500 of the present invention is independent of the design of the router 504, the routing algorithms and the network topology" (Col 4, Lines 64-66). Bernstein goes on to state that "[t]he acceleration 500 may be installed in a conventional routing system by simply unplugging the router 504 from the network connections, connecting the accelerator to those connections, and plugging the router 504 into the accelerator switch 500." (Col 4, Line 66 to Col 5, Line 3).

Cohen discloses a "conventional routing system", and it is apparent from the disclosure of Bernstein that the combination would be trivial. From this passage, it is clear that *any* router design may be used in place of the disclosed router, and that no "substantial redesign" would be necessary, since adding the accelerator switch to Cohen's system would be trivial.

Regarding claims 6, 7, 9 and 20-22:

e) Appellant argues that the combination of Bernstein and Cohen fails to teach or suggest each and every claim limitation (Pages 8-9 of the Brief).

In reply to argument (e) that the combination of Bernstein and Cohen fails to teach or suggest each and every claim limitation, the Examiner respectfully disagrees. Bernstein suggests using parameters extracted from the received packet to uniquely identify a session the packet belongs to in order to properly forward the packet to the correct destination. As discussed above in the Grounds of Rejection for claims 6, 7, 9 and 20-22, the particular parameters to be compared would have been chosen by the system designer depending on the operating environment of the system, when faced with the unique session identification requirement of Bernstein.

Regarding claims 28, 30, 32 and 37, Appellant argues that these claims are allowed for the same reasons as claim 1. Therefore, these arguments are unpersuasive for the reasons set forth above.

Regarding claims 29,33,34 and 35, Appellant merely provides a general assertion that the references do not disclose the claimed subject matter. These arguments are not persuasive, and reference should be made to the Grounds of Rejection for these claims, which points out the portions of the cited reference that disclose these claims.

Regarding claim 38, Appellant argues that "splicing" is defined in the specification at page 19, lines 28-30. Page 19, lines 28-30 does not discuss "splicing", but the term does appear at page 20, lines 8-11, which states "In another full NAT mode (referred to as splicing), load balancer 24 changes the TCP sequence numbers (including

acknowledgement numbers) of packets it forwards, possibly in addition to the IP addresses and/or protocol ports".

It is clear that the cited portion is not a definition of the term splicing, but merely a description of an operation Appellant refers to as splicing. In the absence of an explicit definition in the specification or the claims, the term is given the broadest reasonable interpretation consistent with the specification. If Appellant wanted to incorporate limitations directed to the modification of sequence numbers, acknowledgement numbers, IP addresses or protocol ports into the claims, Appellant was free to do so with an actual definition or via amendment. Appellant chose not to do so, and limitations from the specification are not read into the claims.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Aaron Strange

Jul. 6, 2007

Conferees:

Lynne H Browne
Appeal Practice Specialist, TQAS
Technology Center 2100

Glenton Burgess
Supervisory Patent Examiner
Art Unit 2153